



ADVISOR: A Brief Overview of the DOE HEV Simulator

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Overview of ADVISOR


- ADVISOR created in Nov., 1994 to support DOE Hybrid Program at NREL
- Programmed in MATLAB/Simulink environment
 - allows ultimate flexibility in modeling new vehicles and control strategies
- Currently used by over 20 organizations
- Continuously fed up-to-date component test data through users and university validation efforts
- ADVISOR training held at DOE March 13-14, 1997
- Part of a larger systems analysis effort from NREL and DOE
- Plans to integrate ADVISOR into PNGV Systems Analysis Toolkit



Graphical User Interface

ADVISOR GUI

File Edit Windows Help



Vehicle Config.:

Vehicle: series

Driving Cycle:

Transmission: c_fuds

of cycles

Motor/Controller: 2

☒ SOC-correct

Energy Storage:

APU:

Generator:

Control Strategy:

Comp. Scaling:

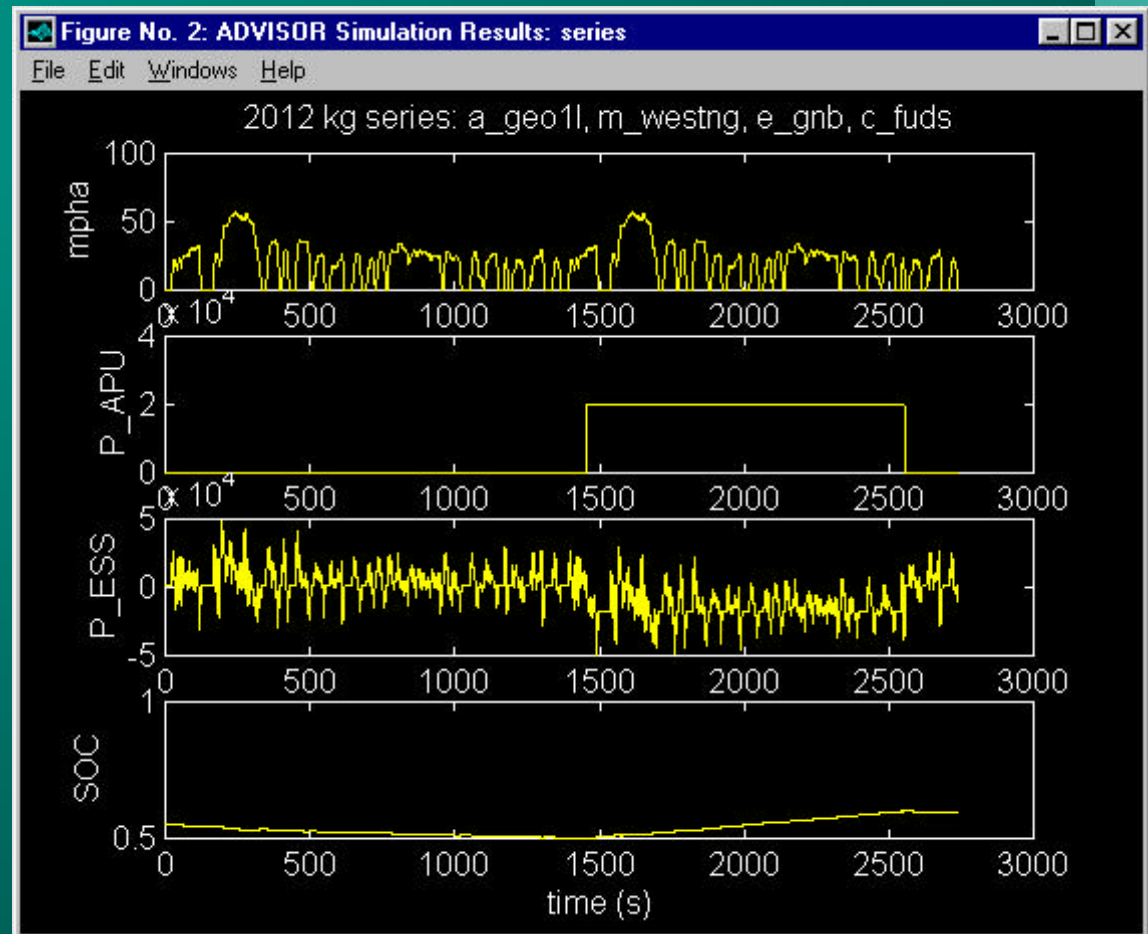
Outputs:

☒ mpha
☒ P_APU
☒ P_ESS
☒ P_mote
☐ P_motm
☐ SOC
☐ T_APU
☐ w_APU

Output file name: out.txt

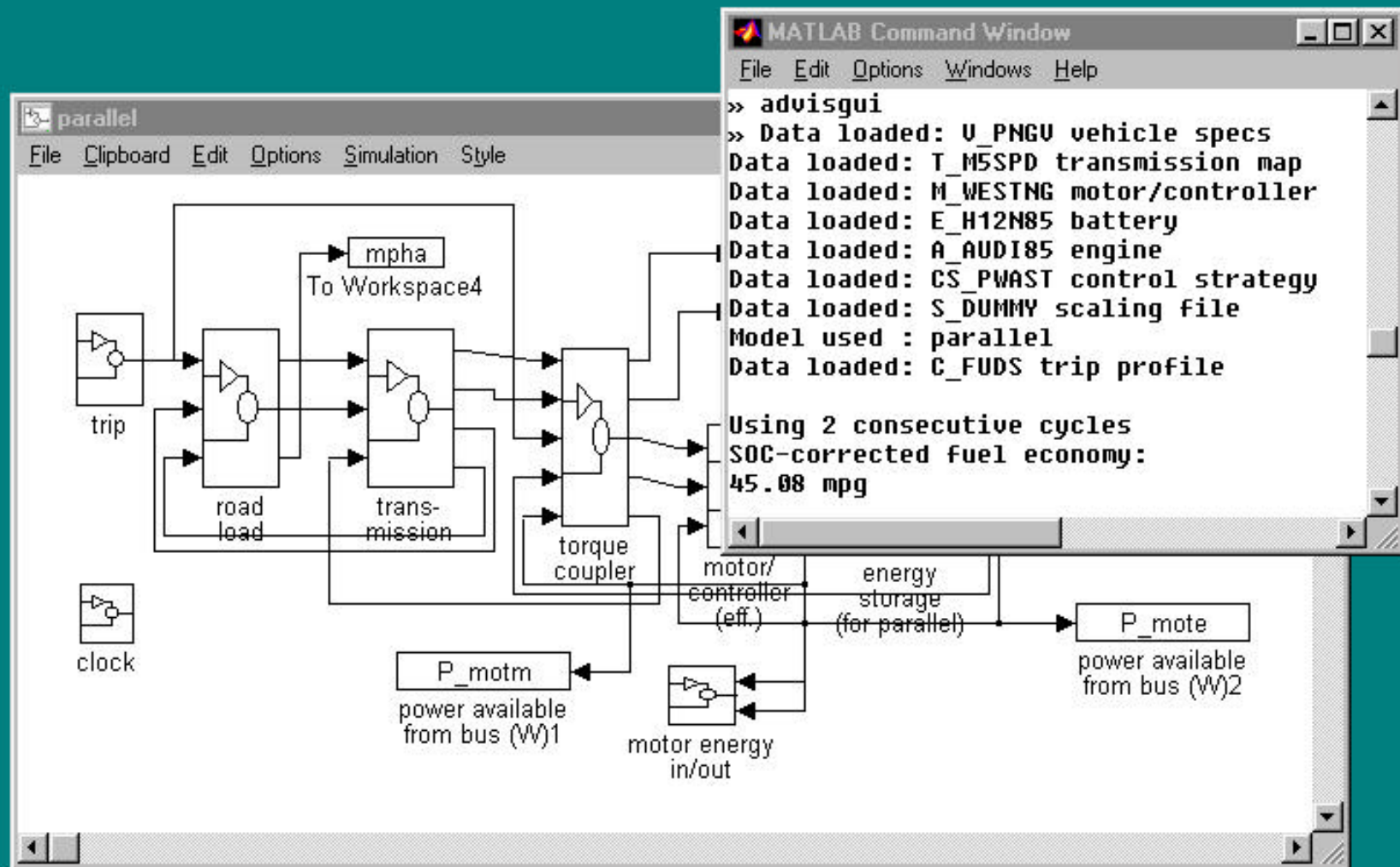
Parametric Study

Run Simulation





Written in the graphical, object-oriented language of MATLAB/Simulink






Easy to Modify Component/Vehicle Data

ADVISOR GUI

File Edit Windows Help



Vehicle: v_pngv

Transmission: t_1spd

Motor/Controller: m_westng

Energy Storage: e_gnb

APU: a_geo1l

Generator: g_eta95

Control Strategy: cs_pwast

Comp. Scaling: s_mutl

Vehicle C... series

Driving C... c_fuds

A_geo1l - Notepad

File Edit Search Help

```
%**** the HEV ADVISOR help on A_GEO1L.M
%This file loads the variables associated
%including emissions and certain operatio
%****
%
APU maxtrq=[61.0058      67.6486 73.7492 7
```

V_pngv - Notepad

File Edit Search Help

```
%**** the HEV ADVISOR help on U_PNGU.M
%Defines vehicle and miscellaneous specifications
%for a hypothetical midsize sedan.
shell_mass=600; % kg
mipart=20; % kg
rho=1.23; % kg/m^3
CD=0.2;
Area=2.0; % m^2
gravity=9.807; % m/s^2
Crr=0.008;
Crr1=0; % s/m
Crr2=0; % (s/m)^2
rf=1;
rradius=0.32; % m
wheel_inertia=0;
disp('Data loaded: U_PNGU vehicle specs')
```



Can Be Used to Quickly Analyze Competition
(such as Japanese 10-15 mode cycle shown here)

